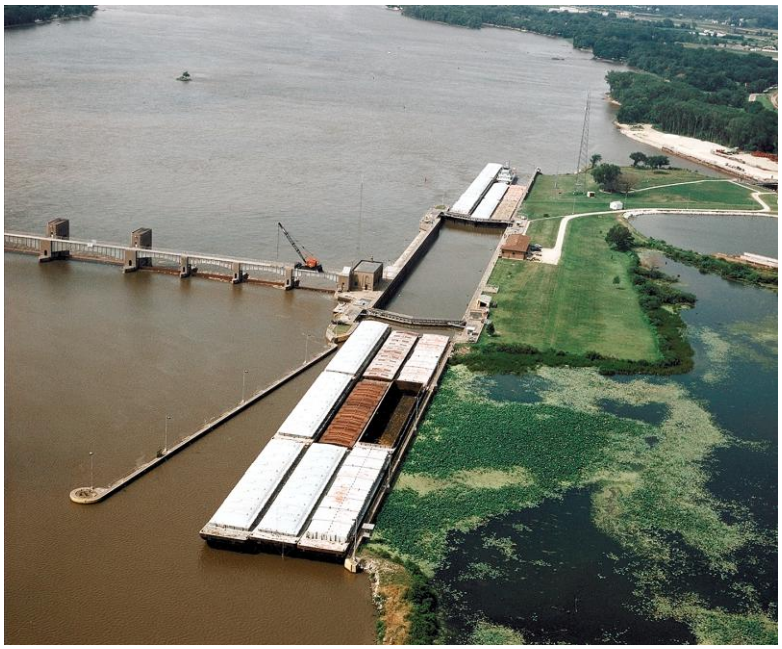
Locks & Dam 14

(Pleasant Valley, Iowa)
Mississippi River

U.S. ARMY CORPS OF ENGINEERS **BUILDING STRONG®**

Construction: 1935-1940
General Contractors:
Lock and Dam: Central Engineering Company, Davenport, Iowa

Congressional District: IA-1; IL-17



Description

Locks and Dam 14 is four miles below LeClaire, Iowa, and 493.3 miles above the confluence of the Mississippi and Ohio rivers. The site is also 3.6 miles below the head of the notorious, rock-bedded, Rock Island Rapids. The LeClaire Lock and the remains of the LeClaire Lateral Canal, built in 1921-1924 to bypass this treacherous stretch of river, are located along the Iowa shore.

The main lock's dimensions are 110 by 600 feet. The dimensions of the LeClaire Lock, which is used as an auxiliary lock, are 80 by 320 feet, with a low-water depth of eight feet at the upper sill and seven feet at the lower sill. The main lock's maximum lift is 11 feet with an average lift of 9.8 feet. It takes approximately eight minutes to fill or empty the main lock.

The movable dam has 13 non-submersible Tainter gates (20 feet high by 60 feet long) and four submersible roller gates (20 feet high by 100 feet long). The dam system also includes an earth and sand-filled dike. It takes nine hours for water to travel from Lock and Dam 13, in Fulton, Iowa, to Lock and Dam 14.

History/Significance

Construction of Lock 14 was begun in August 1935, and was completed on December 22, 1936. Construction of Dam 14 was begun in November 1936, and was completed in December 1938. The structure was placed in operation on June 14, 1939.

The Corps built the oldest elements of this complex between 1921 and 1924, during the six-foot channel project. As part of that channelization, the Corps built a longitudinal dam paralleling the Iowa shore from the head of the Rock Island Rapids at LeClaire, to the head of Smith's Island. The dam formed the riverward wall of the LeClaire Canal, by which vessels could bypass the rapids. The Iowa shore served as the canal's landwall. Most of the longitudinal dam was submerged when Dam 14 was built; however, a portion of the original canal near the dam is still used as a mooring and storage site.

The Hunter Steel Company plant, subcontractor for structural steel, miscellaneous metal, and operating machinery was located at Neville Island, Pennsylvania, immediately below Pittsburg. During the extreme high water on the Ohio River in March 1936, this island was flooded, necessitating closing down the steel plant. A time extension of 12 days was granted to compensate for delays in gate erection due to time lost in the fabrication of structural steel.

Extremely cold weather halted lock construction for 18 days during the winter of 1936, and excessively high temperatures shortened work shifts during the summer but no extensions of time were granted due to weather.

The lock and dam elements of the complex were completed at a cost of $6,439,000.

Annual Tonnage (20-Year Historical)

Year	Tons	Year	Tons	Year	Tons	Year	Tons
1992	29,956,321	1997	25,297,683	2002	28,428,345	2007	20,675,817
1993	18,371,672	1998	27,277,374	2003	24,224,248	2008	15,612,451
1994	21,978,452	1999	30,839,734	2004	20,626,075	2009	17,921,487
1995	27,302,729	2000	28,348,136	2005	20,819,999	2010	17,737,023
1996	27,891,764	2001	24,264,635	2006	21,934,232	2011	17,012,596

Commodity Tonnage & Lockages (2011)

Coal	1,948,192
Petroleum	282,842
Chemicals	2,812,396
Crude Materials	2,662,694
Manufactured Goods	1,005,819
Farm Products	8,247,722
Manufactured Machinery	29,300
Waste Material	0
Containers & Pallets	1,600
Unknown	22,031

Subtotals:	Grain	7,557,790
	Steel	61,010
Lockages:	Commercial Boats:	1,685
	Recreation Boats:	3,900
	Light Boats:	144
	Other Boats:	123
	Total Boats:	5,852
	Total Cuts:	4,428

The 9-Foot Channel Project

Locks and Dam 14 is one of 29 locks and dams on the Upper Mississippi River that provide a water stairway of travel for commercial and recreational traffic from Minneapolis to the Gulf of Mexico.

The existing 9-foot Channel Navigation Project was largely constructed in the 1930s and extends down the Upper Mississippi River from Minneapolis-St. Paul to its confluence with the Ohio River and up the Illinois Waterway to the Thomas J. O'Brien Lock in Chicago. It includes 37 Locks and approximately 1,200 miles of navigable waterway in Illinois, Iowa, Minnesota, Missouri and Wisconsin.

The maintenance needs of the aging infrastructure are increasing at a rate much greater than the operations and maintenance funding provided for the system which adversely affects reliability of the system. Long-established programs for preventive maintenance of major lock components have essentially given way to a fix-as-fail strategy, with repairs sometimes requiring weeks or months to complete. Depending on the malfunction, extended repairs can have major consequences for shippers, manufacturers, consumers, and commodities investors.

Additionally, the system's 600-foot locks do not accommodate today's modern tows without splitting and passing through the lock in two operations. This procedure requires uncoupling barges at midpoint which triples lockage times and exposes deckhands to increased accident rates.

There are more than 580 manufacturing facilities, terminals, grain elevators, and docks that ship and receive tonnage in the Upper Mississippi River basin. Grains (corn and soybeans) dominate traffic on the system. Other commodities, mainly cement and concrete products, comprise the second largest group. A modern 15-barge tow transports the equivalent of 1,050 large semi-trucks (26,250 cargo tons, 875,000 bushels, or 17,325,000 gallons). Annually, the 9-foot project generates an estimated $1 billion of transportation cost savings compared with the operation and maintenance costs of approximately $115 million.